Monsanto

FROM (NAME—LOCATION—PHONE): K.L. Schutzenhofer - W.G. Krummrich Plant - 2482

DATE: September 22, 1989

153669

M. Frederick
J. Gloeckner

SUBJECT: ANALYSIS OF RESIDUE SAMPLE FROM CERRO

REFERENCE:

TO: M. McCombs

At approximately 9:00 P.M. on 9/20/89 we were called to the W.G.K. laboratory by the night superintendent to analyze a sample of solids obtained from a drilling hole at Cerro. The origin of the sample is not known at this time. We were told that a workman on the drilling site was overcome by fumes and taken to the hospital. Bill Boyle requested that we analyze the sample in an attempt to identify its composition.

It was first reported to us that the workman was overcome by smoking fumes and that phosphorus might be present. Therefore, we first looked for evidence of elemental phosphorus. A portion of the sample was poured into an open beaker and observed for signs of phosphorus for a period of time. It should be noted that the material has a moist dirt-like appearance with an oily coating and a faint pungent odor. Another portion of the sample was placed in a beaker with nitric, sulfuric, and perchloric acids and heated to boiling on a hot plate. The acid digestion never showed any signs of burning which usually happens when elemental P_4 is present. Also, the exposed, unreacted sample never smoked or fumed. It was concluded that the sample did not contain elemental phosphorus.

We next attempted to dissolve the sample in methylene chloride. We found that approximately one half the material dissolved while the other half did not, suggesting the material is approximately half organic and half inorganic, or soil. Portions of the methylene chloride layer were analyzed on a gas chromatograph in an attempt to identify the organic content of the sample. This first GC analysis showed that no peaks were observed or identified to less than 0.1% with regards to solvents or current W.G.K. products with boiling points less than 250°C. However, when analyzed on another GC system, many small peaks with patterns resembling petroleum products were observed with boiling points up to 350°C. These peaks were not identifiable.

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Additionally, portions of the sample were mixed with 20% sodium hydroxide and concentrated hydrochloric acid. No reaction was observed with the base, indicating that no phenolics were present. The HCL mixture showed that a good portion of the dirt dissolved, leaving oily globules undissolved.

We have concluded at this point that the material is a residue of some kind, containing dirt and some petroleum products.

K.L. Schutzenhofer

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